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# SAFETY INTELLIGENCE SYSTEMS CORPORATION

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Jeff Runge, M.D.  
Administrator  
NHTSA  
400 Seventh St., NW  
Suite 5200  
Washington, D.C. 20590

NHTSA 01-8876-8

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Dear Dr. Runge,

With this letter, I am requesting that the National Highway Traffic Safety Administration initiate rulemaking to mandate the collection and storage of onboard vehicle crash event data, in a standardized data and content format and in a way that is retrievable from the vehicle after the crash.

Motor vehicle injuries continue to be the leading cause of death for persons age 4 to 33 years old and account for than 90% of all transportation-related fatalities. In 2000, 41,821 people were killed and an estimated 3.2 million people were injured in over 6 million police-reported vehicle crashes. A motor vehicle crash occurs every 5-6 seconds.

Understanding what happens in a crash is essential to preventing these injuries and deaths. This information is the cornerstone of safety decision-making, whether it is designing the vehicle, making policy, identifying a potential problem or evaluating the effectiveness of safety systems. There is no substitute for objective, accurate data from real-world crashes. Emerging technologies have provided crash reconstructionists and investigators a glimpse of real-world data, and highlighted the short-comings of current crash investigations and reconstructions. Validation of the complex safety and technology systems placed in vehicles today requires evaluation of the electronic information generated and utilized by these vehicle systems.

Despite the high-tech nature of motor vehicles today, current methods of crash investigation rely on analyzing the "archeology of the crash", subjective witness statements, and expert opinion to determine the "facts". Increasingly, the movement from mechanical to electrical systems and sensors means that physical evidence of the crash is diminishing. For example, anti-lock brakes, which measure the rotation speed of each wheel, also decrease the skid marks used as indirect evidence of wheel and vehicle behavior. Advanced airbags use multi-level deployments based upon various measured inputs, yet crash investigators may not be able to directly evaluate the performance of those airbags after the crash.

Field investigations of motor vehicle crashes are costly, time consuming, laborious, and notoriously inaccurate. Indirect measures of vehicle crashes, especially at the crash site, erode over time.

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Because of costs and limitations of current crash investigations and reconstructions, the total number of cases available for analysis are limited and skewed toward the more serious crashes. As a result, current data bases are recognized to have major deficiencies because of the small number of crashes they contain and the bias of the information. For example, many crash analyses are based on police reports, which often rely on of subjective witness statements and self-reported information.

Today's vehicles generate, analyze and utilize tremendous amounts of vehicle-based information for operations such as engine and speed control, braking, and deployment of safety systems. Increasingly sophisticated airbags make "decisions" based on vehicle speed, crash direction and severity, occupants size and position, and restraint use. Additional parameters such as brake and throttle position, engine information and vehicle systems status can be captured to help better understand crashes and their causes. Capture and storage of this information is not in all vehicles, nor are the data elements or formats for this information standardized. As such, this information loses its value and is relatively unused or unavailable. The degree of societal benefit from EDR's is directly related to the number of vehicles operating with an EDR and the ability to retrieve and utilize these data.

This lack of knowledge of what happens in real-world crashes severely limits the ability of policy-makers and vehicle designers to save lives. The relative lack of credible real-world information - leading to delays in understanding, evaluating, and improving safety issues - surfaced during the problems with first generation airbags. As children were being killed by passenger front airbags, the Agency required almost a year or more to gather enough cases to better analyze the effectiveness of these airbags. Though the agency chose sled testing as the fastest way for manufacturers to re-design airbags, it soon became clear that there was relatively little knowledge of what a representative real-world crash impulse looked like.

NHTSA's own crash investigations have shown that the difference between derived crash severity calculations and those directly measured by a vehicle may differ by more than 100%. Yet, the Agency, manufacturers, researchers, and others rely on crash severity information in order to better design vehicles, understand crash performance, make policy, develop injury criteria, and understand the biomechanics of injury.

The increasing sophistication and decreasing costs of information technology has created the opportunity to now mandate the capture, storage, and retrieval of onboard crash data. Rulemaking would standardize the collection of existing information as a minimal data set in a standardized format for storage and retrieval. In the simplest form, flash memory would simply collect information from the onboard diagnostic module, the airbag sensing and diagnostic module (SDM), and the engine control module. The NHTSA Working Group on EDR's, IEEE and the Society of Automotive Engineers already have suggested or begun work on minimum data sets. NHTSA would need to propose standards that ensure the crash survivability of this collected data.

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The NHTSA has previously denied similar petitions based upon the belief that the automotive industry is already voluntarily moving in the direction recommended by the petitioners and that some issues associated with this mandate are best addressed in a non-regulatory context.

While some action has been taken by the various motor vehicle manufacturers since the mid-1990's, overall the industry response has been sluggish and disjointed. Much of the information is proprietary to each individual manufacturer and there is no standardization of the data elements or format of information, either by OEM's or suppliers. While some manufacturers have deployed units in their vehicles, others have stated that they will only do so if mandated by the government.

Views of the value of crash data recorder information within the automotive industry vary widely. Some manufacturers admit that having access to real-world crash information will help them better design cars, while others prefer that this information not be available for legal and liability reasons. In fact, some manufacturers have even stated that more accurate crash information would not be useful to them or others. With such a diversity of opinion, it is obvious that federal leadership on this important public safety issue is warranted. -

There are other reasons why a minimum data set of standardized information is a critical keystone in continuing to save lives and improve motor vehicle safety. The FCC is implementing rules to require automatic location information for emergency calls made from wireless phones. The nexus between vehicles and communications provide the basis for Automatic Collision Notification (ACN). Only a small amount of vehicle information such as crash severity, restraint use, direction of force, and location (if available) will be of use to emergency providers. The advent of advanced automatic collision notification systems is dependent upon the standardized collection of crash information in the vehicle. Creating this uniformity will greatly accelerate the deployment of ACN, helping medical providers respond quicker and make better diagnostic and therapeutic decisions.

There are other important opportunities that come from greater amounts of more accurate, objective information including the ability to compare safety standards internationally, enhance roadway design, better understand crash causation and biomechanics, and to more quickly evaluate the effectiveness of policy decisions and engineering designs.

NHTSA has raised the fact that there are a variety of social issues to be addressed. While this is true, they are not insurmountable. Millions of vehicles in the fleet already have some form of an event data recording, so many of these social issues are already at work. Increasing awareness will create a need for society to address some of these issues, though many are beyond the purview of the Agency. The EDR Working Group report has created a substantive basis for addressing these issues.

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Much of the privacy issues can be addressed by ensuring that the vehicle owner also owns the vehicle information and can provide permission for its use, including transmission for Automatic Collision Notification. Unlike telematic service providers that send vehicle tracking information and personal information back to a third party, vehicle crash information does not have personal identifiers and is only stored should a crash occur. In addition, this information is collected without distracting or requiring the driver to interact with the data collection system. Current crash information in the form of police reports and insurance claims have much more personal identifying information than vehicle crash recorders collect.

In 1997, the National Transportation Safety Board issued recommendations to pursue vehicle crash information gathering using Event Data Recorders. In 1997, the National Aeronautics and Space Administration's (NASA) Jet Propulsion Laboratory (JPL) assisted the NHTSA in evaluating the state of advanced air bag technology. The JPL recommended NHTSA study the "feasibility of installing and obtaining crash data for safety analyses from crash recorders on vehicles." In 1998, the NHTSA's Office of Research and Development, with the support of the Motor Vehicle Safety Research Advisory Committee (MVSRAAC), formed a Working Group to gather information to better understand and facilitate the collection and utilization of crash data from onboard recorders. This Working Group, comprised of members of academia, the industry, and other government organizations, finalized its report in September 2001. These events, coupled with NHTSA's, academia's, and the industry's recent experience, provide a solid foundation for rulemaking.

I do hope that the NHTSA will look favorably upon this petition and grant rulemaking on this important matter.

The rulemaking process will allow opportunity for adequate input from various constituents and allow NHTSA to craft a final rule that will provide tremendous societal benefits while observing the rights of individuals.

Please let me know how I may be of further assistance.

Sincerely,



Ricardo Martinez, M.D.  
President & CEO

RM<sub>MD</sub>

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